

WHAT IS CLAIMED IS:

1. A radiation converting substrate constituted
by forming a phosphor layer for converting a
radiation into light and a moisture-preventing
5 protective layer covering said phosphor layer, in
succession on a substrate capable of transmitting the
radiation:

wherein said moisture-preventing protective
layer comprises a first plasma polymerization film
10 formed from a monomer of a silane compound, and a
second plasma polymerization film formed from a
monomer of a fluorine-containing unsaturated
hydrocarbon.

15 2. A radiation converting substrate according
to claim 1, wherein said first plasma polymerization
film and said second plasma polymerization film are
laminated in succession on said phosphor layer.

20 3. A radiation converting substrate according
to claim 2, wherein said fluorine-containing
unsaturated hydrocarbon monomer includes 2 to 5
carbon atoms.

25 4. A radiation converting substrate according
to claim 2, wherein said phosphor layer is
constituted of an alkali halide and a light emission

activator.

5. A radiation image pickup apparatus formed by
adhering a radiation converting substrate according
5 to claim 1 and a sensor substrate including a
photoelectric converting element.

6. A radiation image pickup apparatus
constituted by forming a phosphor layer for
10 converting a radiation into light and a moisture-
preventing protective layer covering said phosphor
layer in succession, either directly or across a
protective layer, on a sensor substrate provided with
a photoelectric converting element:

15 wherein said moisture-preventing protective
layer comprises a first plasma polymerization film
formed from a monomer of a silane compound, and a
second plasma polymerization film formed from a
monomer of a fluorine-containing unsaturated
20 hydrocarbon.

7. A radiation image pickup apparatus according
to claim 6, wherein said first plasma polymerization
film and said second plasma polymerization film are
25 laminated in succession on said phosphor layer.

8. A radiation converting substrate according

to claim 7, wherein said fluorine-containing unsaturated hydrocarbon monomer includes 2 to 5 carbon atoms.

5 9. A radiation converting substrate according to claim 7, wherein said phosphor layer is constituted of an alkali halide and a light emission activator.

10 10. A radiation image pickup system comprising:
 a radiation image pickup apparatus according to
 claim 6;
 signal processing means which processes a
 signal from said radiation image pickup apparatus;
15 recording means which records a signal from
 said signal processing means;
 display means which displays a signal from said
 signal processing means;
 transmission means which transmits a signal
20 from said signal processing means; and
 a radiation source for generating said
 radiation.